

closing and the reflection display device is made to display by irradiating light emitted from the EL display device.

In the above structure, the reflection display device may be equipped with a touch input operational portion.

Also, in the above structures, the portable electronic device is a electronic device having a communication function, and typically is a mobile telephone or a personal digital assistant.

BRIEF DESCRIPTION OF THE DRAWINGS

In the accompanying drawings:

FIGS. 1A to 1C are a top view, a side view, and a perspective view of the present invention (Embodiment 1), respectively;

FIG. 2 is a top view of the present invention (Embodiment 2);

FIGS. 3A to 3C show switched screens;

FIGS. 4A and 4B are a side view and a perspective view of the present invention (Embodiment 3), respectively;

FIG. 5 is a perspective view of the present invention (Embodiment 4);

FIG. 6 is a cross sectional structure view of an active matrix liquid crystal display device (Embodiment 5);

FIG. 7 is a top view of an active matrix liquid crystal display device (Embodiment 5);

FIGS. 8A and 8B are circuit block diagrams;

FIGS. 9A and 9B are a top view and a cross sectional view of an active matrix liquid crystal display device (Embodiment 6), respectively;

FIG. 10 is a cross sectional view of an active matrix EL display device (Embodiment 7);

FIGS. 11A and 11B are a top view and a cross sectional view of an active matrix liquid crystal display device (Embodiment 7), respectively;

FIG. 12 is a circuit block diagram (Embodiment 8);

FIG. 13 is a circuit block diagram (Embodiment 9);

FIG. 14 is a cross sectional view of an EL display device (Embodiment 9); and

FIG. 15 is a circuit block diagram (Embodiment 10).

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

An embodiment mode of the present invention will be described below.

FIGS. 1A to 1C are a top view, a side view, and a perspective view, respectively, of a mobile telephone as one example of a portable electronic device according to the present invention.

The mobile telephone shown in FIG. 1A to 1C has a first display device **101** mainly for color-display of an image with high image quality and a second display device **102** for displaying mainly characters or symbols.

Also, at least one of the first display device **101** and the second display device **102** has a touch input operational portion. The screen in which the touch input operational portion is provided has the function of an operational switch.

The electronic equipment shown in FIGS. 1A to 1C is a portable electronic device in which a cover member having the first display device **101** for displaying an image (digital still image or the like) and the second display device **102** having the touch input operational portion (for displaying characters, symbols, or the like) are attached to each other so as to allow opening and closing. The mobile telephone shown in FIGS. 1A to 1C is collapsible. The present invention can be implemented in a mode shown in FIG. 2.

However, since the display portion can be protected, the collapsible mobile telephone as shown in FIGS. 1A to 1C is preferable.

Also, in the case of the collapsible mobile telephone shown in FIGS. 1A to 1C, an EL display device may be used as the first display device **101** and a reflection liquid crystal display device may be used as the second display device **102**. In this case, when the display screen of the first display device **101** is brought close to the second display device **102** by light folding, even under low light conditions, the screen of the second display device **102** can be visually identified utilizing the light emitted from an EL element in the first display device **101**.

Also, the electronic device shown in FIGS. 1A to 1C has several operational buttons **103**, a voice output portion **104**, a voice input portion **105**, and an antenna **106**.

Also, as shown in FIG. 2, a portable electronic device may be one in which a first display device **204** for displaying an image and a second display device **205** having a touch input operational portion are attached to each other in a longitudinal arrangement.

Also, as shown in FIGS. 4A and 4B, a portable electronic device may be one in which a first display device **401** and a second display device **402** are attached to each other so as to allow opening and closing with a third display device **403** therebetween.

Also, as shown in FIG. 5, a portable electronic device may be equipped with an image input portion **507** such as a CCD image pickup device.

Also, the first display device **401**, the second display device **402**, or the third display device **403** may be provided with a sensor for authentication of users. As the authentication of users, living body information (typically, fingerprint, palmar pattern, voice print, or the like) may be utilized.

Note that a liquid crystal display device or an EL display device can be used as the first display device **401**, the second display device **402**, or the third display device **403**.

In the present invention with the above structure, embodiments indicated below will be described in detail. [Embodiment 1]

In this embodiment, the collapsible portable electronic device shown in FIGS. 1A to 1C will be described. FIG. 1A is a top view, FIG. 1B is a side view, and FIG. 1C is a perspective view.

In FIGS. 1A to 1C, reference numeral **101** denotes a first display device, numeral **102** denotes a second display device, numeral **103** denotes an operational switch, numeral **104** denotes a voice output portion, numeral **105** denotes a voice input portion, and numeral **106** denotes an antenna.

In this embodiment, an EL display device capable of displaying an image with high quality is used as the first display device **101** and a liquid crystal display device is used as the second display device **102**. Also, a touch panel system is employed for the second display device **102**. In the case of the liquid crystal display device, it is necessary to convert a received digital signal into an analog signal. However, when the EL display device is used as the first display device **101**, since a digital image can be displayed without such conversion, the EL display device is preferable. Note that, when a piezoelectric element is incorporated into the second display device, that is, the liquid crystal display device, a touch panel can be realized.

FIG. 3A shows an example of an initial screen in the second display device **102**. A telephone button, electronic